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Memo

DATE: *July 18, 2003*

TO: RHIC E-Coolers

FROM: *Ady Hershcovitch*

SUBJECT: **Minutes of the July 18, 2003 Meeting**

Present: Ilan Ben-Zvi, Rama Calaga, Yury Eidelman (ORNL & BINP Novosibirsk, Russia), Alexei Fedotov, Ady Hershcovitch, Jorg Kewisch, Vladimir Litvinenko, William Mackay, Christoph Montag, Anatoly Sidorin (JINR Dubna Russia), Thomas Roser, Jie Wei.

Topics discussed: Superconducting Cavity, Simulation & Calculations.

Superconducting Cavity: Ilan opened the meeting with a report about the status of the superconducting cavity. There were two bids one from ACCEL and one from Advance Energy System (AES). The AES bid was chosen by the appointed committee, and a contract for the cavity manufacturing was signed. A kick-off meeting of the project was held yesterday, at the forum of the weekly RF cavity group meeting. The meeting was attended by key AES personnel, including their top management and top technical people. The AES personnel presented a program schedule that included:

Mid September 2003 – AES present Manufacturing Planning and Process Verification Plan at Production Readiness Review (PRR),
Early December 2003 – Preliminary Design Review (PDR)
Mid April 2004 – Final Design Review (FDR)
Mid December 2004 – Start cavity processing at JLAB
Mid May 2005 – Begin RF TEST at BNL

The delivery of a copper prototype is scheduled for March 2004 to test HOM frequencies, performance of couplers etc. In answer to Thomas regarding high current tests, Ilan replied that until the room temperature gun is operational at BNL, only low current testing can be performed. It may be done with the superconducting electron gun. Ilan related ongoing investigation on the approach to provide high power RF to the high-current gun. It seems that due to the high costs of CW operation, and considering that LANL will test the gun CW in this year, only pulsed operations will take place at building 939. Concerning Thomas' question the cost of a 1 MW 700 MHz cw klystron system, Ilan's reply to was about $2,000,000 (including the power supply).

Next there was a discussion on whether 700 MHz is the optimal frequency when considering other R&D programs and available high power klystrons. The only alternative would be at 500 MHz where B factories and light sources operate. However, there seem to be no advantage to change.

Finally, Ilan reported that he has been working with Gary McIntyre and John Hauser on the WBS.

Simulation & Calculations: the meeting concluded with a discussion on results from BETACOOL that showed a rather rapid longitudinal cooling. A redistribution of the cooling decrements is needed. Vladimir will calculate the needed dispersion to achieve the desired redistribution of the cooling decrements. The next issue is whether the RHIC lattice can support that dispersion. Ady asked whether the density in large enough for velocity space anisotropy instabilities. These instabilities could "transfer" the longitudinal to the transverse direction. Not all instabilities are bad! Ilan commented that the FEL operation is based on instability. Alexei said that this type of transfer has been observed in very high power (current) LINACs, where densities are extremely high. In our case the density is too low.